APPLICATION FOR
UNITED STATES PATENT

in the name of

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for

Dynamic Identification of Other Users to an Online User

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Dynamic Identification of Other Users to an Online User

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 60/488,749, filed July 22, 2003; U.S. Provisional Application No. 60/488,376, filed July 21, 2003; U.S. Provisional Application No. 60/488,388, filed July 21, 2003; U.S. Provisional Application No. 60/428,263, filed November 22, 2002; U.S. Provisional Application No. 60/428,262, filed November 22, 2002; U.S. Provisional Application No. 60/427,947, filed November 21, 2002; and U.S. Provisional Application No. 60/426,806, filed November 18, 2002.

TECHNICAL FIELD

This invention relates to identification of online users.

BACKGROUND

Online users of the Internet have virtually on-demand access to information such as
5   news, weather, financials, sports, and entertainment as well as the ability to generate
electronic messages and to participate in online discussion groups. Many online users may
access simultaneously the same or similar online locations and may desire information
regarding other individuals accessing those locations. The wealth of available online
locations, the large quantity of users who may access the online locations, and the wealth of
10   information associated with the users may impede an online service provider's ability to
provide the desired information.

DESCRIPTION OF DRAWINGS

FIG. 1 is a schematic diagram of a system for dynamically identifying other users to
15   an online user.

FIG. 2 is a flow diagram of a process implementable by the system of FIG. 1.

FIG. 3 is a schematic diagram of a user identification system.

FIG. 4 is a schematic diagram of a WhoIsHere service that may be used to implement the user identification system of FIG. 3.

FIG. 5 is a schematic diagram of a support service that may be used to implement the user identification system of FIG. 3.

5   FIG. 6 illustrates an exemplary window that may be used by the system of FIG. 3 to identify other users to an online user.

FIG. 7 is a flow diagram illustrating an exemplary process implementable by the user identification system of FIG. 3.

FIGS. 8-10 are transaction diagrams illustrating additional exemplary processes

10   implementable by the user identification system of FIG. 3.

Like reference symbols in the various drawings indicate like elements.

DETAILED DESCRIPTION

An online service provider may display dynamically and in real time information of other users presently viewing the same web page as the user. For instance, the user may

15   perceive when buddy list members view a web page concurrently with the user, or may perceive when other users having a shared trait with the user (e.g., male over 35) view a web page concurrently with the user, or combination of connectivity criteria and trait matching information may be used to identify others who concurrently perceive common web pages or other contact such as television programming. The user may perceive other users based on a

20   trait of the other users and/or based on a trait of the user.

Referring briefly to FIG. 6, a graphical user interface (GUI) 600 displays dynamically and in real time a list of other users presently accessing the same online NFL sports channel as the user. The GUI indicates numerical counts of the number of other users accessing the channel. The GUI may display and order the list of users based on traits, such as, for

25   example, expertise, age and/or gender. The GUI also may be configured to rank and order the other users based on expertise. In any event, the GUI 1000 will update dynamically as

the user navigates to other sites on the, presenting to the user in real-time the other users accessing those sites concurrently with the user.

FIG. 1 shows a generalized system 100 used to identify dynamically to an online user 105 other individuals 110 within an online context 115 of the user 105. The system 100 identifies the other individuals 110 to the user 105 using a dynamic user identification system 120. The dynamic user identification system 120 is configured to be scalable and includes a context determination service 125, an identification service 130, an information storage service 135, and an informing service 140.

The context determination service 125 may be configured to determine the online context 115 of the user 105, and to communicate information indicative of the online context 115. The online context 115 may be based upon an online presence of the user 105, such as, for example, a presence of the user 105 at a particular URL (uniform resource locator), chat-room, message board, or newsgroup. The online context 115 also may be based upon a focus of the user 105 upon a particular web page or portion of a web page at which the user 105 is present. To facilitate the determination of the online context 115, various online locations and/or information sources may be aggregated, for example, by hierarchy or topic, and may be designated accordingly.

The identification service 130 may be configured to identify other individuals 110 present within the online context 115 of the user 105. The identification service 130 may include mechanisms to log entry within and exit from the online context 115 of the other individuals 110. The identification service 130 may employ one or more protocols to transfer information internally or to communicate with other components of the dynamic user identification system 120.

The information storage service 135 stores information (e.g., trait information, identification information, and/or contact information) indicative of the user and/or of the other individuals 110 identified as within the online context 115 of the user 105. For example, the information storage service 135 may store, in relation to the online context 115, information indicative of an other individual 110 indicated by the identification service 130 to have entered within the online context 115. Similarly, the information storage service 135 may remove from storage the information indicative of the individual 110 when the identification service 130 indicates that the other individual 110 has left the online context

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115. Storing trait or other information of essentially only individuals presently within the online context 115 may improve scalability of the system 100.

The trait information of the other individuals 110 may include, for example, information indicative of an age, gender, nationality, race, disability and/or other demographic identifier of the individual, and/or information indicative of an expertise, interest, preference, education, profession, avocation, user type and/or other quality of the other individual 110. In the primary implementation described herein, the trait information does not include "heavy" items such as the extensive information associated with a history of the online activity or correspondence of the other individual 110. While "heavy" items may be stored and communicated as other information in a manner similar to that described for trait information, heavy information items are distinguished from trait information for purposes of this description to better explain one possible implementation in which the system 120 is not burdened and scalability is not impeded. Hence, the trait information is merely a subset of all other available information. The information storage service 135 may store the trait information, the identification information and/or the contact information or may store a reference used to access the information.

The informing service 140 uses the trait, identification, or contact information of the information storage service 135 to inform the user 105 of at least one of the other individuals 110 within the online context 115. The informing service 140 may be configured to identify the other individuals 110 to the user 105 in association with the online context 115. For example, the other individuals 110 may be identified in a pop-up window associated with a web page upon which the user 105 is focused. To provide a more focused and relevant disclosure, the informing service 140 may identify the other individuals 110 to the user 105 based on a common age grouping or other common demographic identifier. For example, the informing service 140 may inform a user 105 between the ages of 25 and 32 of other individuals 110 within the online context 115 who also are between the ages of 25 and 32 years.

The informing service 140 also may provide the user 105 with trait information indicating interests or characteristics of the other individuals 110, and may enable the user 105 easily to communicate with one or more of the other individuals 110 based on the identification and contact information. The informing service 140 may enable the user 105

to modify the presentation of information related to the other individuals 110 (e.g., to determine ordering of the information), to obtain related follow-on information, and/or to select or filter information based on various criteria (e.g., based on a postal code or a telephone area code).

5   The elements of system 100 (the system elements) may include additional mechanisms for delivering or processing data. The mechanisms may include, for example, any applications, protocols, devices, or networks used to facilitate communication or processing of electronic data. The system elements also may include or be included in a general-purpose or a special-purpose computer, a database, a local area network (LAN),

10   and/or a wide area network (WAN). The response to and execution of instructions received by the system elements may be controlled by, for example, a program, a piece of code, an instruction, a device, a computer system, or a combination thereof, for independently or collectively instructing the system elements to interact and operate as described.

     FIG. 2 illustrates a flow diagram of a process 200 implementable by system 100 of

15   FIG. 1 to identify dynamically to the online user 105 at least one of the other individuals 110 within the online context 110. The context determination service 125 determines the online context 115 of the user 105 (step 205). To this end, the context determination service 125 may monitor the online activity of the user 105 and may determine the online context 115 based, for example, on a web page or portion of a web page presently visited and/or focused

20   upon by the user 105.

     The identification service 130 identifies one or more other individuals 110 within the online context 115 of the user 105 (step 210). For example, the identification service 130 may track the entry into and exit from the online context 115 of individuals to determine the other individuals 110 presently within the context 115.

25   The information storage service 135 stores trait information, identification information and/or contact information related essentially only to the other individuals 110 in a context store, such as, for example, a database record associated with the online context 115 (step 215).

     Finally, the informing service 140 informs the user 105 dynamically of at least one of

30   the other individuals 110 based on the stored trait, identification and/or contact information of the identification service 130 (step 220). The informing service 140 may inform the user

105 of the other individuals 110 using, for example, a pop-up window, a list, a graph, or any other appropriate mechanism. The informing service 140 may inform the user 105 of the other individuals 110 in a fashion associated with the online context 115 of the user 105 and may enable the user 105 to interact online with at least one of the other individuals 110 based

5   on information of the information storage service 135.

Referring to FIG. 3, a generalized system 300 is illustrated that uses a dynamic user identification system 320 having a WhoIsHere service 330 to identify dynamically to the user 105 at a client service 305 at least one other individual 110 also within an online context 315 of a large scale network 317. Exemplary components of the notification system 300 are

10   described in greater detail below.

The client service 305 may be configured to provide the user 105 with online access to the network 317 and may include a context window 307 associated with the online context 315 and a WhoIsHere window 309 associated with the WhoIsHere service 330. More generally, the client service 305 may include any device, system, and/or piece of code that

15   relies on another service to perform an operation. For example, the client service 305 may include a device such as a notebook computer, a telephone, a pen-enabled computer, a personal digital assistant (PDA) or mobile telephone, and/or a desktop computer. The client service 305 also may include a Web browser, an email client, a synchronization client (e.g., a calendar synchronization client, or a task list synchronization client), an instant messaging

20   (IM) client, a business productivity application (e.g., a word processor or a spreadsheet program), and/or an operating system or operating system kernel residing on a device. The client service 305 may be arranged to operate within or in concert with one or more other systems, such as, for example, one or more LANs and/or one or more WANs.

The client service 305 may receive and present information to the user 105 using a

25   standard protocol, such as, for example, the standard generalized markup language (SGML), the extensible markup language (XML), the hypertext markup language (HTML), the extensible hypertext markup language (XHTML), the compact hypertext markup language (cHTML), the virtual reality markup language (VRML), the wireless markup language (WML), the voice extensible markup language (VXML), the short message service (SMS), a

30   document object model (DOM), the simple object access protocol (SOAP), or the dynamic hypertext markup language (DHTML). The client service 305 may present the information

to the user 105 in a manner that enables the user 105 to respond to, or to interact with, the presented information.

The large scale network 317 typically allows direct or indirect communication between the client service 305 and the dynamic user identification system 320, irrespective of
5   physical or logical separation. Although not shown in FIG. 3, the large scale network 317 also may allow direct or indirect communication between the client service 305, the other individuals 110, and/or the support service 350. The large scale network 317 may access or include various sources of information, such as, for example, third party information or services, email, a discussion group, a chat room, a news service, a broker service, a banking
10   service, a shopping service, a weather service, the World Wide Web, or other Internet information sources.

The large scale network 317 may employ one or more protocols (i.e., standards, formats, conventions, rules, and structures) to transfer information internally or deliver information to one or more users. The protocols may include, for example, the Internet
15   protocol (IP), the transfer connection protocol (TCP), the hypertext transfer protocol (HTTP), the file transfer protocol (FTP), the user datagram protocol (UDP), the layer two tunneling protocol (L2TP) and/or the simple mail transfer protocol (SMTP). The large scale network 317 may include, for example, the Internet, the World Wide Web, a WAN, a LAN, analog or digital wired and wireless telephone networks (e.g., PSTN, ISDN, or xDSL), radio,
20   television, cable, satellite, and/or any other delivery mechanism for carrying data. The network 317 may be secured or unsecured, public or private.

The online context 315 may be defined by context definition information of the WhoIsHere service 330 and/or by meta data of the online context 315 that itself defines in whole or in part a scope of the context 315. The WhoIsHere service 330 may include or may
25   access context definition information that may define an online context based on a hierarchical relationship of online locations and/or user relationships. For example, the context definition information may indicate that the scope of the online context 315 includes an online news site and web pages hierarchically associated with that site, or that the scope of the online context 315 includes a television channel and programming associated with that
30   channel. The context definition information also may indicate that the scope of the online context 315 is limited according to a language or a geographic access region. For example,

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the scope of the online context 315 may be limited to include only English version pages of a web site and to exclude individuals accessing the website from outside of a predetermined geographic region (e.g., outside of the metropolitan area of the user's residence). In addition, or in the alternative, web pages of the online news site may include a label or tag indicating

5   that they are within the same online context.

The dynamic user identification system 320 may be configured to indicate the number of other individuals 110 within the online context 315 based on trait information (e.g., a participation preference, a common age, and/or a similar demographic identifier) of the user 105 and of the other individuals 110. The dynamic user identification system 320 may

10   identify the online context 315 automatically based upon an intelligent process that correlates derived parameters (e.g., location, language and/or subject matter) of a URL to a related context definition. The dynamic user identification system 320 also may identify the online context 315 based, for example, on a meta tag embedded of the online context 315 that defines the online context 315. The dynamic user identification system 320 also may be

15   configured to show online identifiers (e.g., screen names) of other individuals 110 within the context 315, and may present the online identifiers sorted according to commonality of interest with the user 105.

The user 105 and the other individuals 110 (collectively the users) each may specify certain trait information, such as, for example, participation preferences, to be used by the

20   dynamic user identification system 320. For example, the users may choose to opt-in or opt-out of participation, and may be allowed to do so dynamically during an online session. When opted-in, users may see and be seen using the dynamic user identification system 320. Users also may specify to opt-in or to opt-out of participation on a context-by-context basis, according to categories of contexts, and/or based on trait information, such as, for example,

25   an age or other demographic identifier. For example, users may opt-in or opt-out of some or all: 1) message boards, 2) web sites, and/or 3) chat rooms. Similarly, users may opt-in or opt-out with respect to other individual users and/or with respect to an age or other demographic identifier. For example, a user may opt-in with respect to one or more individuals with whom the user wishes to share presence information, or may opt-out with

30   respect to a list of individuals by whom the user does not wish to be seen. Nevertheless, even when opted-out, a user's un-named presence within a context still contributes toward the

aggregate count of individuals within that context. Additionally, certain classes of users automatically may be opted-out based on trait information, such as, for example, users classified as "Kids," or users classified as "Young Teens," or "Mature Teens" for whom a parental control setting indicates that participation is not permitted.

5   Subject to the participation preferences or other trait information, the dynamic user identification system 320 may enable the user 105 to interact online with one or more of the other individuals 110 within the online context 315, for example, by adding the other individual 110 to a contact list (e.g., a buddy list), or by using instant messaging or email. The dynamic user identification system 320 also may enable the user 105 to interact with one

10   or more of the other individuals 110 using a voice communication provided, for example, using a wireless mobile device. The dynamic user identification system 320 may allow the user 105 to view a profile of the other individual 110 so that the user 105 may determine further the desirability of communicating with the other individual 110.

       In one implementation, the dynamic user identification system 320 may work to

15   identify the viewers of a television program. While the user 105 views the television program, the dynamic user identification system 320 may identify to the user 105 other viewers 110 presently viewing the same program and who also are included in a contact list (e.g., a buddy list) of the user 105 and/or who have similar or complementary trait information. The dynamic user identification system 320 may enable the user 105 to interact

20   during the television program with one or more of the other individuals 110, using, for example, instant messaging and/or any other appropriate form of electronic messaging. The ability to interact dynamically and in real time with other viewers of a television program may significantly enhance the real and perceived value of television programming by aiding viewers to build communities of other individuals having common interests.

25   Moreover, certain television programming lends itself to viewer interaction, such as, for example, performance or reality based programming. In reality based programming the viewers generally select favorite participants, and may be enabled to participate in the program by voting. The interactivity provided by the dynamic user identification system 320 enables viewers of reality based programs to interact with each other regarding their favorite

30   or most disliked reality program participants, or to organize voting blocks or other activities to further invest the viewers' role in and contribution to the reality program.

Based on the trait information, the dynamic user identification system 320 may distinguish visually user-rated experts whose expertise is relevant, for example, to the online context 315, or an interest of the user 105. For example, in a financial context, the dynamic user identification system 320 may distinguish visually an individual who is a financial expert; if the online context 315 relates to health, the dynamic user identification system 320 may distinguish as experts only those individuals having a health related expertise. In like manner, the dynamic user identification system 320 may distinguish visually other individuals based on other trait information, such as, for example, age or another demographic identifier. The dynamic user identification system 320 generally may include any device, system, and/or piece of code configured to perform an operation related to activity associated with the network 317 or requested by the client service 305.

The dynamic user identification system 320 includes a front-end 321 and a back-end 323. The front-end 321 and the back-end 323 may or may not be incorporated within the same hardware or software device, depending, for example, on an anticipated workload of the dynamic user identification system 320. Structuring the dynamic user identification system 320 to include front-end 321 and back-end 323 portions may improve the ability of the dynamic user identification system 320 to serve the many users of a large scale network such as the Internet. In other words, the front-end/back-end structure may improve the scalability of the dynamic user identification system 320.

Referring more specifically to the front-end 321, the front end may include one or more interface services 325. The interface services 325 may communicate online activity of the user 105 or of the other individuals 110 to one or more WhoIsHere services 330 or support services 350 of the back-end 323. The interface services 325 also may communicate service requests from the client service 305 to the back-end 323 and communicate information to the client 305 informing of one or more of the other individuals 110.

The interface services 325 of the front-end 321 communicate between the client services 305 and the WhoIsHere services 330. The interface services 325, for example, communicate information to the WhoIsHere services 330 identifying the online context 315 of the user 105. The interface services 325 may communicate to the WhoIsHere services 330 information based upon a current online location or online activity of the user 105. For example, the interface services 325 may communicate a context identifier (e.g., a meta tag)

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embedded in an information item accessed by the user 105. The interface services 325 also communicate to the user 105 information informing of the other individuals 110 as determined by the WhoIsHere services 330. The interface services 325 may include a print service, a file access service, an IM service, an operating system, an operating system kernel, an authentication service, an authorization service, and/or any combination of these or other services.

In an alternative implementation, the interface services 325 may be included in whole or in part as a component of the client service 305.

The back-end 323 includes one or more WhoIsHere services 330 that determine the other individuals 110 presently within the online context 315 and are configured to inform the user 105 of at least one of the other individuals 110. One or more support services 350 are configured, for example, to communicate information to the WhoIsHere service 330 indicative of online activity and/or preferences of the other individuals 110. The WhoIsHere services 330 and the support services 350 each are described in greater detail below.

The WhoIsHere services 330 communicate trait, identification and/or contact information of the other individuals 110 to the interface services 325 for suggestion to the user 105 through the client service 305. The WhoIsHere services 330 determine the other individuals within the online context 315 and inform the user 105 of at least one of the other individuals 110. The WhoIsHere services 330 may be configured to receive information indicating the current online context of the user 105 from the interface services 325.

The WhoIsHere services 330 may communicate to the interface services 325 a WhoIsHere list of other individuals 110 within the online context of the user 105. The WhoIsHere services 330 may communicate the WhoIsHere list to the interface services 325 automatically after a change in the online context of the user 105 and also at any time that the WhoIsHere list changes. The WhoIsHere services 330 also may communicate the WhoIsHere list to the interface services 325 at short periodic intervals, such as, for example, every 30 or 60 seconds. Alternatively or in addition, the WhoIsHere services 330 may communicate the WhoIsHere list to the interface services 325 in response to a request of the interface services 325. The interface services 325 may be configured to request from the WhoIsHere services 330 an updated WhoIsHere list at set periodic intervals or upon a change in the online context of the user 105.

The WhoIsHere services 330, alone or in conjunction with other services, may perform sorting, prioritizing, or other types of organizational processing on the trait, identification and/or contact information underlying the WhoIsHere list so that the WhoIsHere list is provided in a desired fashion. Typically, the WhoIsHere services 330 will include a software program or a piece of code to cause the WhoIsHere services 330 to operate as described above.

The support services 350 are configured, for example, to communicate with the WhoIsHere service 330 and to provide the WhoIsHere service with information related to the other individuals 110. The network 317 includes one or more online contexts. In general, the support services 350 determine dynamically the online contexts and online locations that each of the other individuals 110 access (e.g., by opening a Web page of the network 317), and/or upon which they focus (e.g., by clicking on an open Web page or a portion thereof). To make this determination, the support services 350 may monitor dynamically the online activities of the other individuals 110 and/or may communicate with client services of the other individuals 110 to obtain relevant activity information. The support services 350 also may determine trait information (e.g., information of an interest, a preference, or an expertise), identification information and/or contact information of each of the other individuals 110. The support service 350 may determine this information by communicating with the other individuals 110, through online activity of the other individuals 110, and/or through the use of user profiles describing the other individuals 110.

Having determined information related to online activity of one or more of the other individuals 110, the support services 350 may communicate that information to the WhoIsHere services 330. The WhoIsHere services 330 include records representative of various online contexts of the network 317. The WhoIsHere services 330 record information related to online activity communicated by the support services 350 using the records representative of the online contexts. For example, the WhoIsHere services 330 may include a record for online context A, and may add to an internal list trait, identification and/or contact information of an individual who has accessed or focused upon a web page within online context A. The WhoIsHere services 330 may remove the individual from the internal list, for example, upon receipt of information indicating that the individual has exited online context A by closing the web page within context A or by logging out. For individuals who

are opted-out or who are globally excluded, the WhoIsHere services 330 may store only anonymous presence information for contribution to a total presence count of the online context 315.

Each of the client service 305, the network 317, and the dynamic user identification system 320 may include further mechanisms for delivering data, such as, for example, the short message service (SMS), the wireless application protocol (WAP), the transport connection protocol (TCP), the Internet protocol (IP), the World Wide Web, one or more LANs, and/or one or more WANs. The client service 305, the network 317, and the dynamic user identification system 320 also may include analog or digital wired and wireless telephone networks, such as, for example, public switched telephone networks (PSTN), integrated services digital networks (ISDN), various types of digital subscriber lines (xDSL), advance mobile telephone service (AMPS), global system for mobile communications (GSM), general packet radio service (GPRS), code division multiple access (CDMA), radio, cable, satellite, and/or other delivery mechanisms for carrying data.

One or more other services may be included in the components of system 300 and/or these components (hereinafter the system services) may be included as part of one or more other services. For example, the system services may include or be included in a general-purpose or a special-purpose computer (e.g., a personal computer, a PDA, or a device specifically programmed to perform certain tasks), a local area network, and/or a wide area network. In either case, the response to and execution of instructions received by any or all of the system services may be controlled by, for example, a program, a piece of code, an instruction, a device, a computer system, or a combination thereof, for independently or collectively instructing the services to interact and operate as described herein.

FIG. 4 illustrates a dynamic user identification system 420 that includes a WhoIsHere service 430 implemented using one or more context transaction services 435 and one or more context database services 440. Each context database service 440 may be configured to communicate with every context transaction service 435 and with every other context database service 440. The context transaction services 435 and the context database services 440 may or may not be incorporated within the same hardware and/or software device, depending, for example, on an anticipated workload of the WhoIsHere service 430. Structuring the WhoIsHere service 430 to include a separable context transaction services

435 and context database services 440 may improve the scalability of the WhoIsHere service 430.

The context transaction services 435 may determine information indicative of online presence and may communicate that information with the context database services 440. The

5   context database services 440 may maintain a list of individuals presently within the online context 315 based on the information indicative of online presence communicated by the context transaction services 435. In general, the information indicative of online presence includes information, such as, for example, an indication that a URL has been accessed by an individual or departed by an individual. The context transaction services 435 may indicate

10   presence information for only a first presence of an individual who is multiply present within the online context 315. For example, if an individual has open simultaneously three instances of the same web page, the context transaction services 435 may indicate to the context database services 440 only one of those presences (e.g., the first presence). Alternatively, the context database services 440 may receive indication of each presence and

15   itself may filter out instances of redundant presence.

The context transaction services 435 also may obtain from the support service 350 trait information related to an individual. The trait information may include preference and/or privacy information associated with the individual, such as, for example, information indicative of a participation status, an instant messaging (IM) visibility preference, an IM

20   status (e.g., an active status, an idle time, an away status, and/or a mobile status), a user class (e.g., "Kids," "Young Teen," "Mature Teen," or "General"), and/or a parental control (e.g., allowed or disallowed).

The trait information also may include information indicative of an interest, expertise, age or other demographic identifier of the individual. The trait information indicative of

25   interest, expertise, or age may be associated with one or more categories. In one implementation subject matter or demographic categories are used including, for example, Autos, Careers and Work, Computing Center, Entertainment, Games, Health, House and Home, Internal, International, Kids Only, Live, Local, Men, Music, Network Programming, News, Parenting, People Connection, Personal Finance, Relationships, Research and

30   Learning, Rewards, Senior Living, Shopping, Sports, Teens, Travel, Welcome, What's New, Women, Workplace, and Miscellaneous. Categories also may be based upon a relevant

geography or a language. The categories may be predetermined or they may be determined dynamically based on an intelligent process.

The online context 315 also may be associated with a category. For example, the online context 315 may include a corresponding category identifier (e.g., a meta tag) embedded in a location of the online context 315. Alternatively, the context transaction services 435 may categorize the online context 315 automatically based upon an intelligent process to correlate the online context 315 to a most closely matching category. The context transaction services 435 also may be configured to generate dynamically one or more additional categories if already existing categories do not adequately describe one or more online contexts of importance. The context transaction services 435 may coordinate categorization with the support services 350.

The context database services 440 may include a database, such as, for example, a relational database, for storing or referencing trait, identification and/or contact information associated with the individuals identified to be present within the online context 315. The trait information, for example, may include or be derived from an individual profile, WhoIsHere participation information, and/or individual location information,.

The context database services 440 use the information indicative of presence communicated by the context transaction services 435 to maintain a context record of individuals present within the online context 315. To improve scalability, the context database services 440 may include in each context record essentially only information related to individuals presently within the online context associated with the context record.

In one implementation, the context database services 440 store information within the context record indicative of an individual based on a communication of the context transaction services 435 that the individual has opened a web page within the online context 315. Similarly, the context database services 440 may remove from the context record the information indicative of the individual 110 when the context transaction services 435 communicate that the individual 110 has closed the web page within the online context 315.

The context database services 440 may indicate that certain individuals listed are excluded globally from WhoIsHere participation based on information communicated by the context transaction services 435. For example, an individual may be indicated as globally excluded based on trait information indicating that the individual is not opted into

WhoIsHere, that the individual is categorized as a "Kid," "Young Teen," or a "Mature Teen" for whom a parental control prohibits participation. To prevent lurking (e.g., observing others without being observed), an individual also may be indicated as globally excluded who, although opted into WhoIsHere, indicates a preference to remain invisible to other

5   WhoIsHere participants.

The context database services 440 may communicate to the context transaction services 435 a list of individuals within the online context 315. The context transaction services 435 may cache the list of individuals to reduce communication with the context database services 440. The context database services 440 may compose the list from the

10   information stored in the context record based on preference information or other trait information of the requesting user 105. For example, the user 105 may prefer that the list of individuals 110 present within the context 315 be sorted according to a relevant expertise or a commonality of interest with the requesting user 105. The commonality of interest may include a direct interest match between the user 105 and an other individual 110, or an

15   indirect interest match between the user 105 and an individual selected as an associate by the other individual 110 (e.g., by listing the individual to a contact list).

For individuals not indicated as globally excluded, the context database services 440 may indicate in the list trait, identification and/or contact information of those individuals. Otherwise, for an individual indicated as globally excluded, the context database services 440

20   indicate the presence of that individual generically by incorporating their presence only in a count of total users within the context 315. To the extent that a particular individual 110 has indicated a desire to exclude themselves from visibility to the user 105, that individual 110 will not be identified on the list. In any event, the context database services 440 may provide the list automatically to the context transaction services 435 at certain periods or in response

25   to a request of the context transaction services 435.

The online context 315 may experience periods of high use that may cause a server of the context database services 440 or the context record of the context database services 440 to exceed a usage threshold value. To redistribute the load in response to the exceeded usage threshold value, the context record of the context database services 440 may be migrated to

30   another server of the context database services 440 that is less busy. Where the usage threshold value exceeded is associated particularly with the context record, the context record

may be divided between one or more servers of the context database services 440. Should the activity associated with the divided context record fall sufficiently, the context record may be unified again upon a single server of the context database services 440. Migration, division, or unification of a context record may be performed automatically. Information indicative of any migration, division, or unification of the context record may be communicated to the context transaction services 435.

FIG. 5 illustrates a dynamic user identification system 520 that includes a support service 550 implemented using a rating service 555, an interest service 560, a connection service 565, and a profile service 570. The rating service 555 may be configured to determine and/or identify a rated expertise of one or more individual users. The rating service 555 may determine and store expertise ratings for individual users based on predetermined expertise categories, such as, for example, the subject matter categories previously described. The rating service 555 may be configured to communicate an expertise rating of an individual user based on a request of the WhoIsHere service 330.

The interest service 560 may be configured to record interest information of one or more individual users. The interest service 560 also may be configured to communicate an interest message based on a request of the WhoIsHere service 330. The interest message may include interest information of an individual user and interest information of designated contacts (e.g., buddies) of the individual user.

The connection service 565 may be configured to provide or manage access to the network 317 by one or more individual users. The connection service 565, for example, may be configured to manage user logins and/or IM access. The connection service may be configured to determine and provide information indicative of a users online status or IM status, such as, for example, whether the user is active, idle, away, or logged-out.

The profile service 570 may be configured to manage profile information including trait, identification and/or contact information related to one or more individual users. The profile information may include, for example, client addressing information, location information, age or other demographic information, WhoIsHere participation information, general visibility information, user status information, user class information, and/or communication preferences related to an individual user. The profile information may be provided by an individual user and/or may be determined automatically, for example, based

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on online activity of the individual user. The profile service 570 may be configured to update profile information based on information communicated by the WhoIsHere service 330 and to communicate requested profile information to the WhoIsHere service 330.

The different services of the support services 550 also may access or include various sources of information, such as, for example, third party information or services, email, a discussion group, a chat room, a news service, a broker service, a banking service, a shopping service, a weather service, the World Wide Web, or other Internet information sources. The different services of the support service 550 may employ one or more protocols (i.e., standards, formats, conventions, rules, and structures) to transfer information internally or deliver information to one or more users. Protocols employed by the support service 550 may include, the Internet protocol (IP), the transfer connection protocol (TCP), the hypertext transfer protocol (HTTP), the file transfer protocol (FTP), the user datagram protocol (UDP), the layer two tunneling protocol (L2TP) and/or the simple mail transfer protocol (SMTP).

Each of the various services of the support service 550 themselves may include front-end and back-end services. For example, the services may include a front-end interface service configured to interface with individual users or with other services or devices. The services also may include back-end processing and/or database services configured to interact and respond according to communications of the front-end services.

FIG. 6 illustrates an exemplary WhoIsHere window 600 that may be used by the system of FIG. 3 to identify one or more other individuals 110 to the online user 105. The WhoIsHere window 600 indicates a Sports:NFL context 605 associated with the window 600. The window provides a total count (491) 610 of the other individuals 110 within the Sports:NFL context 605. The window 600 also indicates the number of individuals (2) 615 within the Sports:NFL context 605 who are NFL experts, and the number of other individuals (112) 620 within the context 605 whose interests match a specified interest of the user 105.

A presentation selector 625 enables the user 105 to select a preferred presentation of one or more of the other individuals 110. The presentation selector 625, for example, may enable the user 105 to show experts first (as shown), to show interest matches first, or to list the other individuals 110 alphabetically.

The WhoIsHere window 600 also includes a display panel 630 used to show identifiers of one or more of the other individuals 110. Online identifiers for one or more of

the individuals included in the total count 610 are displayed by the display panel 630. In this example, the two experts, InternetAnne and ChattingChuck, are displayed first according to the user preference indicated by the presentation selector 625. Starburst symbols in the leftmost column provide a graphical indication of the expert status of InternetAnne and

5   ChattingChuck. In addition to an online identifier, each displayed individual also has an associated graphical icon that may, for example, communicate an identity, interest or expertise of the user. Commonality of interest (e.g., an interest match) between the user 105 and a displayed individual 110 is indicated visually by highlighting the row or online identifier of the matching individual. For example, the highlighted rows of InternetAnne and

10   SurfingDiane indicate an interest match for each. Although not shown, color may be used to provide additional indication of expertise and/or commonality of interest, age or other demographic identifier.

The WhoIsHere window 600 may enable the user 105 to open an IM or email to an other individual who is displayed by clicking on the displayed identifier of that other

15   individual. For example, the user 105 may initiate an IM to SurfingSally by clicking on that individual's online identifier. Alternatively, the user 105 may select SurfingSally and may click on the Buddy Info button 635 to view buddy information related to SurfingSally.

The WhoIsHere window 600 also includes a check-box 640 allowing the user 105 easily to opt-in or opt-out of WhoIsHere. As illustrated, the user 105 has opted into

20   WhoIsHere by checking the check-box 640 to allow the user 105 to see and be seen.

FIG. 7 illustrates a method 700 implementable by the dynamic user identification system of FIG. 3. The method 700 includes back-end steps used to determine other individuals within an online context of the user to be identified to the user, and front-end steps used to identify the other individuals to the user based on the online context of the user.

25   The back-end and front-end steps may be performed asynchronously and/or concurrently to each other.

Referring to the back-end steps, online activity of other individuals is monitored (step 705). If an entry event (e.g. an open event, a focus event) is detected (step 710), then entry event and identification information is communicated (step 715). Additional information,

30   such as, for example, trait and/or contact information of the other individual is accessed from an additional information source (e.g., a user profile database) based on the identification

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information (step 720). The additional information may include, for example, client addressing information, email information, interest information, age or other demographic information, and/or a WhoIsHere preference such as a participation status. A corresponding online context is determined based on the entry event information and context definition information (step 725). The information related to the other individual is stored and/or associated with a context record associated with the determined context (step 730). Monitoring of the online activity of the other individuals continues (step 705).

If an exit event is detected (step 735) rather than an entry event (step 710), then exit event and identification information is communicated (step 740). A corresponding online context is determined based on the exit event information and context definition information (step 745). The information related to the other individual is removed and/or disassociated from the context record associated with the determined context (step 750). Monitoring of the online activity of the other users continues (step 705).

Multiple back-end steps may be performed concurrently.

Referring to the front-end steps, an online context of a user 105 is determined based on online activity of the user 105 and context definition information (step 760). The online context of the user is monitored for change (step 765), and while the online context remains unchanged, information indicative of other individuals presently within the online context is accessed (step 770). The user then is informed of one or more of the other individuals based, for example, on preference or other trait information of the user and/or of the other individuals (step 775). To the extent that a change to the online context of the user is detected (step 765), the new online context is determined and the front-end steps are repeated. Multiple front-end steps may be performed concurrently.

FIGS. 8-10 illustrate data flow diagrams showing processes that may be used to implement the system of FIG. 3.

FIG. 8 illustrates a process 800 that may be used to implement the system of FIG. 3 when the user opens a window, for example, to a web page. Upon opening a window to a web page for the user, the client communicates an "open window" message to the interface services (step 805). The interface services communicate the "open window" message to the context transaction services (step 810). Based on the "open window" message, the context transaction services issue a "query user info" message to the support services (step 815). The

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support services respond to the "query user info" message by passing a "user info" message to the context transaction services (step 820).

The context transaction services generate a "context entry" message based on the "open window" message and the "user info" message and communicate the "context entry"

5   message to the context database services to indicate the presence of the user within the context (step 825). The context transaction services also communicate a "query who is here" message to the context database services (step 830). The context database services generate a "list of users" message identifying individuals within the context in response to the "query who is here" message (step 835). The context database services communicate the "list of

10   users" message to the context transaction services (step 835). The context transaction services generate a "sorted list of users" message based on the "list of users" message and preferences of the user and communicates the "sorted list of users" message to the interface services (step 840). The interface services communicate the "sorted list of users" message to the client for presentation to the user (step 845).

15   FIG. 9 illustrates a process 900 that may be used to implement the system of FIG. 3 when the user closes a window, for example, to a web page. Upon closing a window to a web page for the user, the client communicates a "close window" message to the interface services (step 905). The interface services communicate the "close window" message to the context transaction services (step 910). The context transaction services communicate a

20   "context exit" message to the context database services based on the "close window" message (step 915).

In response, and to the extent that the user does not have open other windows within the context, the context database services remove the user from the list of users within the context. The context transaction services generate a "user list update" message (step 920).

25   The "user list update" message may indicate individuals present within another online context of the user and may be based on information cached by the context transaction services, or upon information queried from the context database services as shown in FIG. 7. The context transaction services communicate the "user list update" message to the interface services (step 920). The interface services communicate the "user list update" message to the

30   client for presentation to the user (step 925).

FIG. 10 illustrates a process 1000 that may be used to implement the system of FIG. 3 when the user alters a participation preference while within an online context. When the user alters a participation preference (e.g., by checking an Opt-In check-box), the client communicates a "participation change" message to the interface services (step 1005). The

5   interface services communicate the "participation change" message to the context transaction services (step 1010).

In response, the context transaction services communicate an "update check-box" message to the interface services (step 1015), which communicates the "update check-box" message to the client (step 1020). The context transaction services communicate a

10 "participation change" message to the support services so that the support services may update stored preferences of the user (step 1025). The context transaction services also communicate a "participation change" message to the context database services (step 1030). The context transaction services modify trait information related to the user to reflect the changed participation status of the user.

15 Subsequently, the context transaction services communicate a "query who is here" message to the context database services (step 1035). Based upon the changed participation status of the user, the context database services generate a "user list "message based on the "query who is here" message. The context database services communicate the "user list" message to the context transaction services (step 1040). The context transaction services

20 generate a "sorted list of users" message based on the "list of users" message and preferences of the user and communicates the "sorted list of users" message to the interface service (step 1045). The interface services communicate the "sorted list of users" message to the client for presentation to the user (step 1050).

Other implementations are within the scope of the following claims.

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